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**PATENT APPLICATION**

#14
K Davis
4-13-04

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Zhigang FAN et al.

Group Art Unit: 2623

Application No.: 09/447,554

Examiner: J. Wu

Filed: November 23, 1999

Docket No.: 104184

For: MAXIMUM LIKELIHOOD ESTIMATION OF JPEG QUANTIZATION VALUES

REPLY BRIEF

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Sir:

In reply to the January 28 Examiner's Answer, please consider the following remarks:

Examiner's Answer Argument A.1.

Starting on page 7, the Examiner's Answer asserts that "Appellant's argument on the decompressed image data reveals his misunderstanding of basic principles of image compression and his mischaracterization of the Branden . . . ."

Appellants respectfully submit that their characterization of the van den Branden et al. reference is correct. Van den Branden et al. discloses, in col. 6, lines 40-62, the following:

> In broad functional overview, the bitstream quality analyzer 190 of FIGS. 5 and 6 is a device that monitors a video transmission and analyzes the quality of that video transmission at varying levels of detail, selectable by a user via the GUI 200. As shown in FIG. 7, the bitstream quality analyzer 190 includes an MPEG video decoder 210 and a Compressed Domain Quality Meter (CDQM) 220. The decoder 210 implements all of the functions of a conventional video decoder, including performing inverse variable length coding (IVLC) to expand the variable-length encoded data, performing inverse quantization of the quantized DCT coefficients (IQDCT) to obtain the DCT coefficients, and performing inverse DCT calculations (IDCT) and motion compensation to reconstruct the pixel data. However, in contrast to conventional video decoders that receive a compressed video bitstream and output pixel data, the decoder 210 of the bitstream quality analyzer 190 is capable of performing various levels of decoding,

based on the level of monitoring and quality analysis selected by the user via the GUI 200. Within the bitstream quality analyzer 190, the CDQM 220 estimates various measures of distortion of the resulting video output (i.e. as pixel output) using only the compressed video bitstream." (emphasis added)

Thus, van den Branden et al. specifically discloses that compressed data is received into block 210 and the compressed data is only used to estimate various measures of distortion of the resulting video output, regardless of the fact that a user can selectively perform decoding, as disclosed by van den Branden et al., in col. 3, lines 15-57.

Claim 1 recites "creating an estimated quantization table from the decompressed image data." Van den Branden et al. does not disclose or suggest this feature because van den Branden et al. explicitly teaches that "[w]ithin the bitstream quality analyzer 190, the CDQM 220 estimates various measures of distortion of the resulting video output (i.e. as pixel output) using only the compressed video bitstream." (emphasis added) In other words, regardless of any selective decoding of the compressed video bitstream in van den Branden et al.'s video decoder 210, only the compressed video bitstream is used by CDQM 220, as explicitly stated by van den Branden et al.

The Examiner's Answer characterizes van den Branden et al. as inputting decompressed image data into the inputs of the CDQM 220, but fails to indicate any disclosure in van den Branden et al. that supports such a characterization. Such a characterization is contrary to the explicit statement in van den Branden et al. that only the compressed video bitstream is used, as discussed above. The Examiner's Answer improperly interprets the explicit statement contrary to its plain meaning, asserting that van den Branden et al.'s statement that only the compressed video bitstream is used by the CDQM 220 means that decompressed video data is used by the CDQM 220, but "no other additional additional information [is] needed."

Examiner's Answer Argument A.2.

Starting on page 9, the Examiner's Answer discusses language concerning an estimated quantization table that is not recited in the claims and refers a discussion that took place during an interview concerning replacing "generating" with --creating--. An issue in this appeal is whether the claimed invention, which recites in pertinent part, "creating an estimated quantization table from the received decompressed data," is rendered obvious by the applied art. The Examiner's Answer appears to focus on language that is not recited in the claims, and thus is not at issue on appeal.

The Examiner's Answer unduly focuses on the meaning of the term "creating." The claims recite "creating an estimated quantization table from the received decompressed data," not just the term "creating." Appellants have not argued any "specialized meaning" of the term "creating." As discussed above, van den Branden et al.'s compressed domain quality meter (CDQM) 220 uses only the compressed video bitstream and, as such, does not disclose or suggest "creating an estimated quantization table from the received decompressed data." (emphasis added)

Van den Branden et al. mentions quantization tables in col. 2, lines 25-28 as part of the prior art, and mentions quantization matrices in col. 10, lines 40-45, col. 13, lines 25-28. However, no mention of creating an estimated quantization table or matrix is found in these disclosures. The Examiner's Answer asserts that van den Branden et al. "clearly teaches 'creating an estimated quantization table from the received decompressed image data'" without citing any disclosure in van den Branden et al. that supports the assertion. The text of van den Branden et al. (col. 9 ln. 33 - col. 10, ln. 45) cited by the Examiner's Answer simply does not disclose creation of an estimated quantization table from decompressed data.

The Examiner's Answer attempts, on page 10, to explain "why Van den Branden et al. changes/creates the quantization table according to quality estimations." Appellants respectfully disagree with this explanation and conclusion because, as discussed above, van

den Branden et al. simply does not disclose creating an estimated quantization table. Van den Branden et al. only creates three different estimates of various measures of distortion including (1) mean square error (MSE), (2) motion prediction error, and (3) an objective metric based on human visual prediction, using the CDQM 220 - see col. 7, lines 25-35. The third "objective metric based on human visual prediction" is also denoted "Displaced Frame Difference" or "DVD" - see col. 11, line 63 to col. 13, line 42. No disclosure or suggestion of "creating an estimated quantization table" is found in van den Branden et al..

Examiner's Answer Argument A.3.

Starting on page 11, in paragraph 3, the Examiner's Answer alleges another two references (Shimizu and Coleman) are cited as both showing the feature of "creating an estimated quantization table." However, the Examiner's Answer fails to indicate where this feature is allegedly found in the Shimizu and Coleman references. Appellants' Appeal Brief, pages 14-16, explains why the Shimizu and Coleman references do not disclose what the final rejection alleges they disclose and presents other reasons why the rejection is improper and without merit.

Examiner's Answer Argument A.4.

On page 12, with respect to the issue of proper motivation to combine the applied references, the Examiner's Answer asserts that "both Brandon and Shimizu or Coleman [are] in the image processing field, especially image compression/decompression related image processing field."

The showing , teaching, or motivation to combine the prior art references is an "essential evidentiary component of an obviousness holding." C.R. Bard, Inc. v. M3 Sys. Inc., 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232(Fed. Cir. 1998. The showing must be clear and particular, and broad conclusory statements about the teaching of multiple references, standing alone, are not "evidence." See In re Dembiczak, 175 F.3d 994 at 1000, 50 USPQ2d 1614 at 1617 (Fed. Cir. 1999).

The assertion that "both Brandon and Shimizu or Coleman [are] in the image processing field, especially image compression/decompression related image processing field" is neither clear nor particular. Instead, it is merely a broad conclusory statement about the teaching of the multiple applied references which is, standing alone, not "evidence" of proper motivation to combine these references.

On page 13, the Examiner's Answer states that van den Branden et al. "changes the quantization matrices in the decoder according to the quantization error (col. 9, line 64 - col. 11 line 62)." Appellants respectfully disagree with this statement.

What van den Branden et al. actually does is to calculate "metrics pertaining to the amount of compressed data in the video decoder, how well the encoder estimated the size of the decoder buffer, how well the encoder estimated the bit rate, and whether coded bits are being used efficiently." (col. 3, ln. 66 - col. 4, ln. 3) In other words, van den Branden et al. does not estimate a quantization metric, as claimed. Rather, van den Branden et al. calculates metrics, none of which is a quantization table or metric, which allow a user to determine the value of the decoding process.

Examiner's Answer Argument A.5.

On page 14, the Examiner's Answer contends that the "unique feature" recited in dependent claims 2 and 12 "is probably not supported in the specification." This statement is improper because it is based solely on speculation and not on any factual basis. Claims 2 and 12 are originally filed claims and, as such, are part of the original specification. It is well settled that the claims as filed are part of the specification, and may provide or contribute to compliance with 35 U.S.C. §112. See Northern Telecom, Inc. v. Datapoint Corp., 908 F.2d 931, 938, 15 USPQ2d 1321, 1326 (Fed. Cir. 1990) (the original claims are part of the patent specification); In re Benno, 768 F.2d 1340, 1346, 226 USPQ 683, 686-87 (Fed. Cir. 1985); In re Frey, 166 F.2d 572, 575, 77 USPQ 116, 119 (CCPA 1948), cited in Hyatt v. Boone, 47 USPQ2d 1128, 1130 (Fed. Cir. 1998).

Examiner's Answer Argument A.6.

On pages 14 and 15 , the Examiner's Answer quotes portions of van den Branden et al. that mention the words "estimations" and "estimating." However, none of the cited occurrences discloses or suggests "creating an estimated quantization table from the received decompressed image data," as claimed. "Estimations of distortion," "estimation of the pdf for the considered sequence" and "estimating the parameters of GCF by maximum likelihood estimation" are not the same as "creating an estimated quantization table from the received decompressed image data," as recited in the claims. The Examiner's Answer provides no further explanation or evidence to establish otherwise.

In this regard, the Examiner's Answer alleges that "EQ. (3) is utilized to change or create the each Q factors of quantization table so does the maximum likelihood estimation." Appellants respectfully submit that equation 3 is used only to determine the mean square error (MSE) of a single coded block of a macroblock, where the MSE is only one of three disclosed estimates of distortion - see cols. 9 and 10 of van den Branden et al. As discussed above, van den Branden et al. simply does not create an estimated quantization table, as recited in the claims.

Examiner's Answer Argument B.1.

On page 16, the Examiner's Answer addresses the issue of motivation to combine the applied references. In this regard, the Examiner's Answer states that "both Brandon and Shimizu or Coleman as well as Daly are in the image processing field , especially image compression/decompression related image processing field. Braden clearly shows a similar method and apparatus for compressing and decompressing image data." As discussed above, Appellants respectfully submit that these are merely broad conclusory statements about the teaching of the multiple applied references which are, standing alone, not "evidence" of proper motivation to combine these references.

With respect to Daly, the Examiner's Answer alleges that Daly teaches processing techniques missing from van den Branden et al., Shimizu and Coleman, i.e., "the steps of determining the block having truncated of uniform image data and excluding one of the image data values." Daly is said to use "the techniques to improve the image quality measurment, [sic] which is one of the problems Branden tries to solve." Appellants respectfully disagree.

Van den Branden et al. analyzes image quality, but does not improve the quality of the images. Appellants respectfully submit that one of ordinary skill in the art would have been satisfied with van den Branden et al.'s analyzer and would have no incentive to combine it with a specific type of compression scheme. Furthermore, van den Branden et al.'s system is not designed to be used with a specific type of encoder.

Appellants respectfully submit that the motivation to combine van den Branden et al.-Shimizu or van den Branden et al.-Coleman with Daly is improperly based on hindsight using Appellants' invention as a blueprint for combining the references.

Examiner's Answer Argument C.1.

On page 17, the Examiner's Answer merely states its disagreement with Appellants' characterization of Yovanof, stating that Appellants' argument is in error because of Appellants' mischaracterization of van den Branden et al. Appellants disagree and reassert that Appellants' characterization of Yovanof is correct. Yovanof merely determines the quantization error in a DCT based lossy compression scheme, and does not create an estimated quantization table based on the histograms shown in Figs. 3 and 4.

Conclusion

In view of the foregoing, Appellants respectfully submit that the final rejections of record are improper, and the Honorable Board is requested to reverse those rejections and return the application to the Examiner to pass this case to issue.

Respectfully submitted,

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